

ABSTRACT OF THE DISCLOSURE

A method of filling a bit line contact via. The method includes providing a substrate having a device region and periphery region, the device region having a transistor, 5 having a gate electrode, drain region, and source region, on the substrate, forming a dielectric layer overlying the substrate, the dielectric layer having a bit line contact via exposing the drain region, and periphery contact via exposing the periphery region, forming a doped conductive 10 layer, lower than the dielectric layer, overlying the drain region, conformally forming a barrier layer overlying the dielectric layer, doped conductive layer, and periphery region, and forming a first conductive layer filling the bit line contact via and periphery contact via.